

Strategic Analysis of Rare Earth Elements and Lithium for Investors, Media, and Market Participants

Executive Summary

Rare earth elements (REEs) and lithium represent cornerstone commodities in the global transition to green energy and advanced technologies. Both markets have experienced significant price volatility from 2020-2024, with different underlying dynamics. While the rare earth market remains highly concentrated with China controlling approximately 64% of global production revenue, the lithium market has seen rapid expansion of production capacity across multiple jurisdictions. Despite growing demand from electric vehicles and renewable energy applications, prices for both commodity groups have moderated from 2022 peaks, presenting strategic investment opportunities in companies developing production capacity in strategic locations.

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1. Market Overview: Critical Commodities in Transition

1.1 Price Trends 2020-2024

Rare Earth Elements

Rare Earth Element	2020 (USD/kg)	2021 (USD/kg)	2022 (USD/kg)	2023 (USD/kg)	2024 (USD/kg)	5-Year Change
NdPr Oxide (Mixed)	\$45	\$92	\$124	\$75	\$54	+20.0%
Neodymium Oxide	\$49	\$98	\$134	\$78	\$56	+14.3%
Praseodymium Oxide	\$47	\$93	\$127	\$75	\$65	+38.3%
Dysprosium Oxide	\$261	\$410	\$382	\$330	\$260	-0.4%
Terbium Oxide	\$670	\$1,346	\$2,051	\$1,298	\$810	+20.9%
Cerium Oxide	\$1.5	\$1.4	\$1.2	\$1.0	\$1.0	-33.3%
Lanthanum Oxide	\$1.5	\$1.4	\$1.2	\$0.7	\$0.6	-60.0%
Scandium Oxide	\$935	\$892	\$815	\$902	\$834	-10.8%

Lithium

Lithium Product	2020 (USD/t)	2021 (USD/t)	2022 (USD/t)	2023 (USD/t)	2024 (USD/t)	5-Year Change
Lithium Carbonate (Battery Grade)	\$10,100	\$14,200	\$71,100	\$41,300	\$14,000	+38.6%
Lithium Hydroxide	\$7,571	\$18,700	\$70,022	\$51,772	\$12,372	+63.4%
Spodumene Concentrate (6%)	\$435	\$647	\$4,542	\$3,840	\$989	+127.4%

1.2 Market Dynamics

Rare Earth Elements

The rare earth market has experienced distinct phases over the 2020-2024 period:

- **2020:** Subdued prices following COVID-19 disruptions
- **2021-2022:** Sharp price increases driven by supply constraints and surging demand for green energy technology
- **2023-2024:** Price moderation as new supply sources developed and demand growth temporarily slowed

The "magnet rare earths" (neodymium, praseodymium, dysprosium, terbium) continue to command premium prices and show the highest volatility, reflecting their critical importance in permanent magnets for electric vehicles, wind turbines, and electronics.

Lithium

The lithium market has undergone extreme price volatility:

- **2020:** Low prices due to oversupply concerns and pandemic-related demand reduction
- **2021-2022:** Unprecedented price surge (>700% for lithium carbonate) driven by EV adoption acceleration and supply chain constraints
- **2023-2024:** Significant price correction as new production capacity came online, particularly from expanded operations in Australia and South America

Unlike rare earths, lithium experienced a more dramatic boom-bust cycle, with prices now stabilising at levels still well above historical averages but significantly below 2022 peaks. The different market structures—lithium being more geographically diverse but still concentrated among a handful of major producers—has created distinct investment dynamics between these critical mineral markets.

2. Industry Structure and Key Players

2.1 Market Concentration

Rare Earth Elements

Analysis of 80 rare earth-related companies reveals substantial concentration in both geography and market share:

- **China:** 13 companies controlling 64.3% of global rare earth revenue
- **United States:** 9 companies representing 32.3% of revenue
- **Australia:** 46 companies, yet only contributing 2.4% of revenue
- **Other regions (Canada, Europe):** 12 companies with less than 1% revenue share combined

Lithium

The lithium sector shows different concentration patterns with 5 major producers dominating global production:

- **Albemarle (USA):** ~21% of global production capacity
- **SQM (Chile):** ~17% of global production capacity
- **Ganfeng Lithium (China):** ~14% of global production capacity
- **Tianqi Lithium (China):** ~12% of global production capacity
- **Pilbara Minerals (Australia):** ~8% of global production capacity

By country, production is distributed across:

- **Australia:** 52% of global production (primarily hard-rock mining)
- **Chile:** 23% of global production (brine operations)
- **China:** 13% of global production (diverse sources)
- **Argentina:** 7% of global production (brine operations)
- **Other regions:** 5% of global production

2.2 Leading Companies by Critical Mineral Focus

Leading Rare Earth Companies

Company	Location	Rare Earth Focus (%)	Market Cap (USD million)	Revenue (USD million)
China Rare Earth Resources and Technology	China (SHZ)	70%	4,736.0	3,786.0
China Northern Rare Earth Group	China (SHH)	60%	12,491.6	5,197.8
Scandium International Mining Corp.	Canada (TOR)	58%	12.2	0.0
Rainbow Rare Earths Limited	UK (LSE)	57%	77.5	0.0
Lynas Rare Earths Limited	Australia (ASX)	48%	4,512.5	610.1
China Rare Earth Holdings Limited	Europe (FRA)	43%	139.3	103.7
MP Materials Corp.	USA (NYSE)	43%	4,374.8	253.4

Leading Lithium Companies

Company	Location	Lithium Focus (%)	Market Cap (USD million)	Revenue (USD million)
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Livent Corporation	USA (NYSE)	92%	4,850.0	1,025.3
Pilbara Minerals	Australia (ASX)	89%	9,240.0	2,220.5
Allkem Limited	Australia (ASX)	87%	5,880.0	1,140.2
Ganfeng Lithium	China (SZSE)	83%	11,740.0	3,450.6
Albemarle Corporation	USA (NYSE)	73%	22,900.0	9,620.0
SQM	Chile (NYSE)	65%	18,350.0	7,230.0
Tianqi Lithium	China (SZSE)	62%	12,630.0	3,980.0

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